Claims:

1. A device (100) for manual input of control signals in a computer-related environment, the device comprising:
a base (10) for supporting the device on a surface;
a first input member (20) mounted on the base (10) for rotary movement about an axis (21) extending generally upwardly from the base (10), the first input member (20) having an axial extent (22) from an end region (23) proximal the base (10) to an end region (23) distal from the base and enclosing a central space (26) within which a sensor arrangement (50) is housed for detecting and interpreting rotary movement of the first input member (20) relative to the base, the first input member (20) having an opening at each of its proximal and distal end regions (23, 24); and
at least two second input members (31, 32) provided at or adjacent said distal end region (24) of the first input member, each of said second input members (31, 32) comprising a switch or relay adapted to be actuated by application of finger pressure;
wherein rotary movement of the first input member (20) and/or actuation of the second input members (31, 32) is adapted to generate a corresponding control signal within the computer environment and wherein the at least two second input members (31, 32) are mounted such that rotary movement of the first input member (20) relative to the base does not influence or alter a position of the two second input members (31, 32).

2. A device according to claim 1, wherein the first input member (20) comprises a generally cylindrical sleeve- or ring-like element having a substantially hollow or open central region (26) which extends between the said proximal and distal end regions (23, 24).

3. A device according to any one of the preceding claims, wherein the first input member (20) has a generally circular cross-section transverse to its rotational axis (21).

4. A device according to any one of the preceding claims, wherein the movement or actuation of each input member (20, 31, 32) can be performed independently without affecting the other input member(s).

5. A device according to any one of the preceding claims, wherein the diameter of the first input member (20) is less than about 70 mm, and preferably less than about 55 mm.

6. A device according to any one of the preceding claims, wherein the axial extent (22) of the first input member (20) is less than about 65 mm, and more preferably in the range of about 20 mm to 50 mm.

7. A device according to any one of the preceding claims, wherein the first input member (20) is mounted for rotation about a frame (51) which extends from the base generally centrally of the first input member (20), and wherein the second input members (31, 32) are provided at an upper end region (30) of the frame (51).

8. A device according to claim 7, wherein the upper end region (30) of the frame (51) projects beyond the distal end region (24) of the first input member (20).

9. A device according to any one of the preceding claims, wherein the axis of rotation (21) of the first input member (20) extends substantially perpendicular to the base (10).

10. A device according to any one of the preceding claims, wherein the rotary movement of the first input member is within a limited angular range, said angular range being preferably less than about 120°, more preferably less than about 60°, and even more preferably less than about 30°.

11. A device according to any one of the preceding claims, wherein the first input member (20) has a rotational home position, and the user interface device is adapted to generate a control signal when the first input member (20) is rotated about its axis away from said home position.

12. A device according to claim 11, wherein the first input member (20) is resiliently biased to return to said home position.

13. A device according to any one of the preceding claims, wherein the first input member (20) is adapted for rotary movement in either or both of the clockwise and counter-clockwise directions about the rotational axis (21).

14. A device according to any one of the preceding claims, wherein the first input member (20) is adapted for "finger-tip control", such that the rotary movement of the first input member relative to the base requires a force commensurate with what can be easily applied by an average user's fingers.

15. A device according to claim 13, wherein the resilient bias of the first input member (20) is less than about 15 N/mm, preferably in the range of about 0.1 to about 10 N/mm, and more preferably in the range of about 0.5 to about 5 N/mm.

16. A device according to any one of the preceding claims, wherein the second input members (31, 32) are configured as push-button switches or relays, and the user interface device is adapted to generate a control signal when each said second input member is manually activated via the application of finger pressure.

17. A device according to any one of the preceding claims, wherein the control signal generated upon movement or actuation of at least one of said first or second input members (20, 31, 32, 33, 34) is programmable.

18. A device according to claim 17, including operating software designed to enable the respective control signal associated with actuation of a particular input member (20, 31, 32, 33, 34) to be altered or set to one of a number of possible alternatives.

19. A device according to according to any one of the preceding claims, including operating software designed to enable parameters of the device such as response speed and/or sensitivity of the input members to be adjusted.

20. A device according to claim 18 or claim 19, wherein the operating software is adapted to display details of a respective control signal associated with one or more of said input members (20, 31, 32, 33, 34), and/or said possible alternatives, on a display monitor associated with the computer processing unit with which the device (100) is used.

21. A device according to any one of the preceding claims, wherein the two second input members (31, 32) are programmed such that each of said second input members performs an opposite function to the other.

22. A device according to any one of the preceding claims, wherein the device (100) includes four second input members (31, 32, 33, 34), preferably able to be programmed.

23. A device according to any one of the preceding claims, further including one or more third input members (41, 42, 43, 44, 45) provided on the base adjacent the first input member.

24. A device according to claim 23, wherein each said third input member (41, 42, 43, 44, 45) is in the form of a switch or relay adapted to be manually activated in similar fashion to each said second input member.

25. A device according to claim 23 or claim 24, wherein the one or more third input members (41, 42, 43, 44, 45) are not programmable to provide different operational control signals, but rather have pre-set functions.

26. A device according to any one of the preceding claims, wherein the base (10) is designed for translational movement over a supporting service in such a way that the translational movement generates a control signal within the computer environment.

27. A device according to any one of the preceding claims, wherein, in addition to being rotatable, the first input member (20) is displaceable in an axial direction relative to the base to also generate a control signal in the computer-related environment.

28. A device according to claim 27, wherein the first input member (20) is displaceable in either or both axial directions, preferably against a resilient bias which acts to return the first input member to an axial home position.

29. A device according to any one of the preceding claims, wherein at least a portion of the frame (51) around which the first input member is mounted is movable to generate an input control signal.

30. A device according to claim 29, wherein the frame portion (51) is pivotable, translatable, or both pivotable and translatable relative to the base (10) of the device to generate a control signal.

31. A device according to claim 30, wherein the frame portion (51) has a resilient bias against said pivotable and/or translational movement, which bias acts to return the frame portion to a neutral position.

32. A device according to any one of claims 29 to 31, wherein application of lateral pressure to the first input member (20) is adapted to pivot or translate said frame portion relative to the base (10).

33. A device according to any one of the preceding claims, wherein the sensor arrangement (50) is designed to detect and interpret rotary movement of the first input member and/or axial displacement of the first input member and/or pivoting or translational movement of the frame portion.

34. A device according to any one of the preceding claims, wherein the sensor arrangement (50) is mounted on or within the frame (51).

35. A device according to any one of the preceding claims, wherein the base (10) is adapted to support the device on an operating surface, such as a table or desktop.

36. A device according to any one of the preceding claims, wherein the device (100) is designed for one-handed operation by a user.

37. A system for image generation and/or manipulation in a computer environment, wherein the system includes a user interface device (100) according to any one of the preceding claims.